Addonics
T E C H N O L O G I E S

User Guide
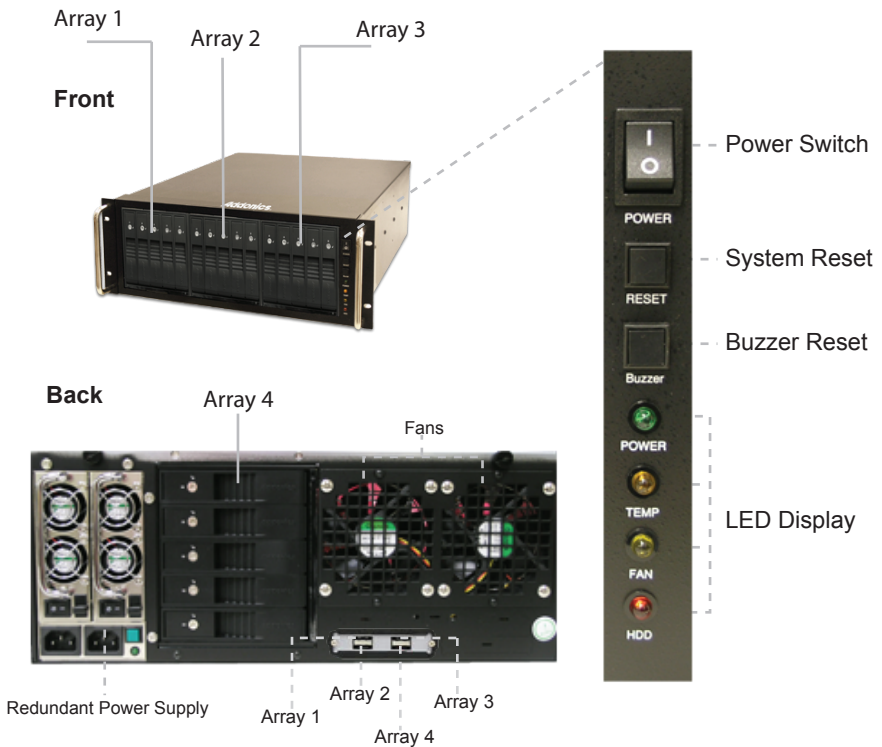## RAID Rack
(RR2035RSDES)

www.addonics.com

v8.1.11

Technical Support
If you need any assistance to get your unit functioning properly, please have your product information ready and contact Addonics Technical Support at:

Hours: 8:30 am - 6:00 pm PST
Phone: 408-453-6212
Email: http://www.addonics.com/support/query/

Front

Array 1   Array 2   Array 3

Power Switch

POWER

System Reset

RESET

Buzzer Reset

Buzzer

POWER

TEMP

FAN

LED Display

HDD

Back

Array 4

Fans

Redundant Power Supply

Array 1   Array 2   Array 3

Array 4

Power Switch: This is the switch to power on devices connected to the power supply. The power LED will light up to indicate power is supplied.
Note: The main power switch located at the back of the enclosure must be turned on first.

Reset Button: Not operational.

Buzzer Reset: Pressing the button stops the overheat buzzer from making a sound. The buzzer will make a sound when temperature inside the storage rack exceeds the temperature setting on the Thermal Management card.
Note: Buzzer reset switch does not silence the port multiplier buzzer.

Power LED: Lights up when the power switch is turned on.

Temp LED: Normally on when unit is operational. If the temperature setting inside the storage rack exceeds the setting on the thermal card, the LED flashes.

Fan LED: Normally on when fan is operational. If an abnormal condition is detected, the LED flashes.

HDD LED: Not operational.

RAID Rack with Port Multiplier Compatibility

Note: When configured as a set of individual drives, the Port Multiplier will only work with a Port Multiplier aware host. Identify your host controller and check with its hardware manufacturer if you are unsure. Addonics offers several Port Multiplier capable host adapters.
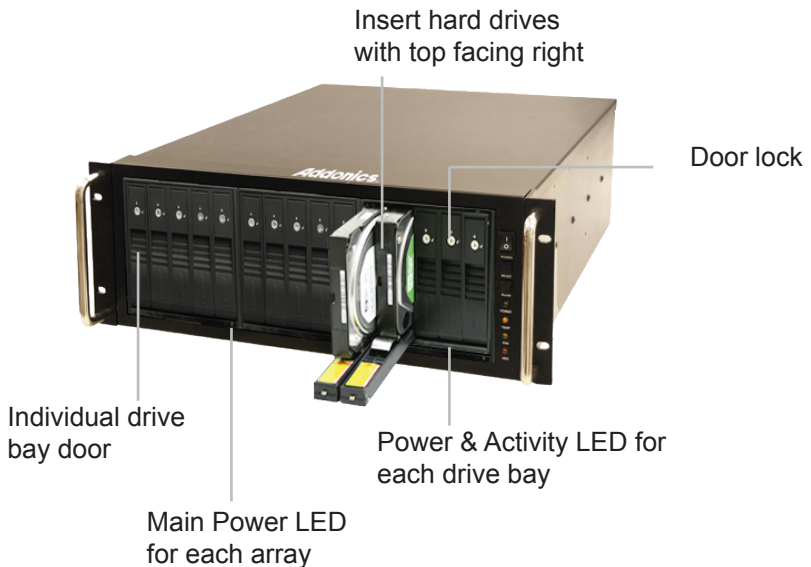
Power Supply and Host Connection

The redundant power supply provides 500W of power. Before turning on the main switch located on the front panel of the RAID Rack, connect and switch on both units in this power supply. If only one power supply is running, an audible alarm will sound.

Connect each array to a computer using the provided eSATA cables before powering up the RAID Rack.

Installing drives into the RAID Rack

1. Be sure the lock on each drive door is in an unlock position. If not, use the key that comes with the Disk Array to unlock the drive door. Pull on the door lever to swing open the drive door all the way.

2. Slide a 3.5" SATA hard drive into the drive slot with the drive connector side facing in. Be sure to orient the hard drive correctly as shown in the yellow label on the inside of the drive door – with drive door swing open at the bottom, the top of the hard drive should face to the right. The drive should slide all the way into the slot with very little resistance. Forcing the drive into the slot will cause drive damage or permanent damage to the Disk Array.

3. Once the drive is all the way into the drive slot, close the door all the way till the drive door latch securely. This will engage power and data connection with the hard drive. The LED lit for the drive slot should lit if the Disk Array already powered on. You may lock the drive door with the key.

4. To remove the hard drive from the Disk Array, simply follow the step 2 – 3 in reverse.

Insert hard drives with top facing right

Door lock

Individual drive bay door

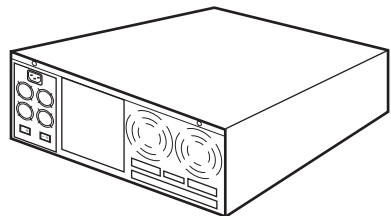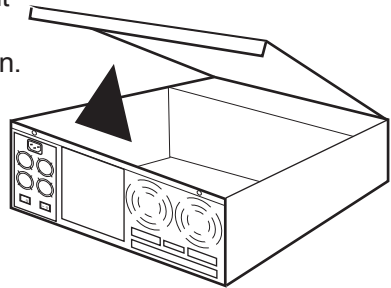Power & Activity LED for each drive bay

Main Power LED for each array
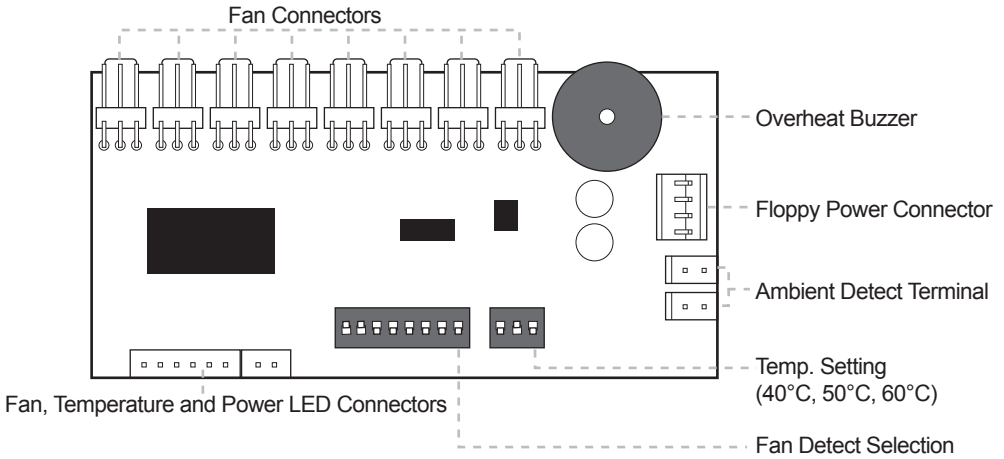
How to Remove the Top Cover:

1. Locate the 2 screws at the back of the storage rack
2. Turn screws counterclockwise to loosen.
3. Lift the top cover and pull towards the rear end of the rack.

To Mount Back the Top Cover:

1. Align the top cover with the edges of the rack.
2. Lay it flat on the rack and slide it towards the front of the rack.
3. Turn screws clockwise to tighten.

Thermal Management Card on the RAID Rack*

Fan Connectors

Overheat Buzzer

Floppy Power Connector

Ambient Detect Terminal

Temp. Setting
(40°C, 50°C, 60°C)

Fan Detect Selection

Fan, Temperature and Power LED Connectors

Fan 1 to Fan 8 could be set either "ENABLE" or "DISABLE". When all the fans are set on "DISABLE", the Fan LED will have no light on.

Temperature setting is configured for 50°C by default. Switches are 40°C, 50°C and 60°C. Set only one switch in the ON position.

*The Thermal management card in the RR2035ASDES is pre-configured. This diagram is for reference only.

Port Multipliers

Dipswitch

SET Button

Array 1

Array 2

Array 3

Array 4
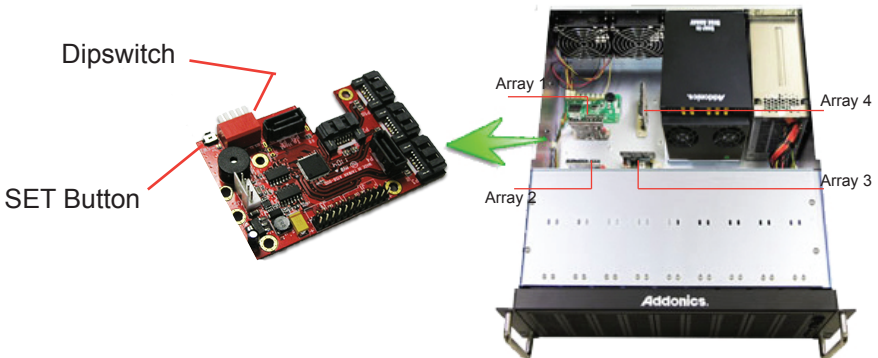
Resetting the RAID Mode

NOTE: This procedure destroys all RAID data. It should not harm individual drives or their contents; however, creating or running backups of all data is strongly recommended before proceeding.

1. Power down the unit and set the dip switch to the factory default setting (all switches OFF).
2. While holding the SET button with a ballpoint pen, turn the unit on. A long beep will sound from the Port Multiplier. The SET button may be released once the long beep stops.

Setting or Modifying the RAID Mode

NOTE: Setting or modifying the RAID mode destroys all data.
1. Follow the procedure for resetting the RAID Mode.
2. Power down the unit and set the dip switch to the desired RAID Mode.
3. While holding the SET button with a ballpoint pen, turn the unit on. A long beep will sound from the Port Multiplier. The SET button may be released once the long beep stops.

If instead of a long beep the Port Multiplier sounds a series of short beeps, an error has occurred during configuration of the array.

Windows users may install the JMicron HW RAID Manager application located on the SATA Controller CD. In the CD, browse to Configuration Utilities → JMB393. The JMicron HW RAID Manager can be used to create, modify, and monitor the health status of the RAID drives, and provide status alerts. When configuring the RAID mode using the RAID Manager application, it is strongly recommended to leave the dip switch in the factory default setting.

Using identical drives for all settings other than JBOD or LARGE is strongly recommended. Creating a LARGE array using drives that have different properties will use all space on all members, and performance will match that of the member in use during any particular I/O operation. Creating a RAID using drives that are not all the same size will result in all members using only as much space as the smallest member. Creating a RAID using drives that have different performance will degrade the overall performance of the array.

BZS Switch (SW1:1):

The BZ switch is used to silence the audible alarm buzzer. The OFF position permits the audible alarm, and the ON position silences the audible alarm. The BZ switch has immediate effect.

EZ Switch (SW1:2):

The EZ (spare) switch inhibits spares when ON. When in the OFF position, all individual drives (not defined as members of an array) are considered spare. Should a RAID become degraded, when the EZ switch is in the OFF position a spare drive will be used automatically to rebuild the RAID, if present. EZ mode is determined when the unit is powered up. Changing the switch will have no effect until the unit has been re-powered.

RAID Mode Switches M2, M1, M0 (SW1:3 – SW1-5)

The RAID Mode switches define what type of RAID will be initialized when the unit is powered up while the RAID Mode button is held down. Each type of RAID has different properties and requirements, as follows:

Dipswitch Position	1	2	3	4	5
Raid Mode	**BZS$_1$**	**EZ**	**M2**	**M1**	**M0**
JBOD (Individual drives) *** FACTORY DEFAULT SETTING**	OFF	OFF^2	OFF	OFF	OFF
0	OFF	**ON^3**	**ON**	**ON**	**ON**
1 or 10	OFF	OFF	**ON**	**ON**	OFF
3	OFF	OFF	**ON**	**ON**	OFF
5	OFF	OFF	OFF	**ON**	OFF
CLONE	OFF	OFF	OFF	**ON**	**ON**
LARGE	OFF	**ON**	**ON**	OFF	**ON**

1 Audible alarm is recommended at all times.
2 EZ mode has no effect in JBOD mode.
3 Disabling EZ for RAID 0 and LARGE is strongly recommended.

JBOD Mode (Individual Drives)

Number of drives: at least 1
Unit capacity: N/A (100% of each individual drive)
Spares: no
Fault tolerance: none
JBOD mode offers all connected units to the host adapter, no RAID is defined at all.
NOTE: JBOD mode requires a SATA controller featuring Port Multiplier support for eSATA connections.
NOTE: Optical drives can only be configured as JBOD using an eSATA connection.

RAID 0 (Stripe set)

Number of drives: at least 2
Unit capacity: size of each member times number of members.
Spares: no
Fault tolerance: none - if any member is lost all data is lost.

RAID 0 "stripes" the file system across the array by placing sectors of data sequentially between drives in a specific order.

RAID 1 or 10 (Mirror set, Stripe of mirror sets)

Number of drives: 2 (RAID 1) or 4 (RAID 10).
Unit capacity: size of one member (RAID 1) or size of two members (RAID 10).
Spares: yes – if EZ mode is not disabled and 3 (RAID 1) or 5 (RAID 10) drives are present, the array will be initialized with a spare.
Fault tolerance: RAID 1 can withstand the loss of one drive without losing data. RAID 10 can withstand the loss of one drive from each mirror set without losing data.

RAID 1 works by duplicating the exact same data on two drives.
RAID 10 works by using two RAID 1 sets configured as members of a RAID 0. Disks 1 and 2 are mirrored, disks 3 and 4 are mirrored, and the two mirror sets are striped together.

RAID 3 (Stripe set with dedicated parity)

Number of drives: at least 3
Unit capacity: size of one member times number of members minus one.
Spares: yes
Fault tolerance: can withstand the loss of one drive without losing data.

RAID 3 works by striping data for individual I/O blocks across all members except one, which contains parity data for the stripe set computed by the Port Multiplier.

RAID 5 (Stripe set with striped parity)

Number of drives: at least 3
Unit capacity: size of one member times number of members minus one.
Spares: yes
Fault tolerance: can withstand the loss of one drive without losing data.

RAID 5 works by striping entire I/O blocks across all members of the set, with each member taking turns carrying parity data computed by the Port Multiplier.

CLONE (Mirror set)

Number of drives: at least 2
Unit capacity: size of one member.
Spares: yes
Fault tolerance: can withstand the loss of any number of drives without losing data as long as at least one complete member remains online.

CLONE mode works the same way as RAID 1, by maintaining a complete copy of the entire set of data on each drive.

LARGE (Spanned set)

Number of drives: at least 2
Unit capacity: 100% of all drives together regardless of differences in size
Spares: no
Fault tolerance: cannot withstand the loss of any drives without losing data. However, some data may be recovered as long as the drive(s) carrying the file system data (boot record, directory, etc.) remain online.

LARGE mode is neither a RAID nor is it a JBOD. It works by declaring the sum of all available space of the member drives as a single unit, without striping the data. As each member is filled, new data is stored on the next.

Notes about Spare Drives

If EZ mode is disabled (SW1:2 ON), all individual drives not configured as array members will be offered to the host adapter as separate units.

To create an array with one or more spares, set or modify the RAID mode using fewer than 5 members, while the spares are disconnected from the Port Multiplier. When EZ mode is enabled, individual drives connected when an array is present are considered spare.

Spare drives must be equal to or larger in size than the smallest member.

When any type of array is defined, individual units will be considered spare. RAID 0 and LARGE arrays are not fault-tolerant and spare drives will not be useful; therefore, disabling EZ for these arrays is recommended.

When a spare drive is present and a fault-tolerant RAID (1, 10, 3, or 5) is defined, EZ mode will automatically rebuild any available spares into the array.

CONTACT US

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